Chaff and Straw Spreader Attachment for a Plot Combine

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Commercially available plot combines are not equipped with chaff and straw spreaders. We fabricated a chaff and straw spreader for a Hege 140 plot combine for harvesting several different crops in long-term cropping systems experiments. A high-pressure radial blade blower fan was mounted behind the engine on a flat area above the sieves (Fig. 1). The fan is powered by a belt drive from an accessory pulley on the engine. A simple spring loaded idler sheave was added to the belt drive assembly to maintain belt tension and minimize vibration. With the combine engine at full throttle driving the fan pulley at 2000 revolutions per minute, the fan moves 30 cubic meters air per minute at 248 pascal. A simple dual outlet manifold was constructed from rectangular steel tubing, capped with flat plate, and ported to attach flex hose (Fig. 1) to provide air delivery along both sides of the combine to the distribution pipes.

The two PCV distribution pipes were centered across the width of the upper and lower sieves (Fig. 2). Small metal deflectors made out of scrap tin were attached with screws near the holes and bent to adjust the air velocity and direction. The distribution pipes were attached to the support structure underneath the sieves with U-clamps. The U-clamps provide a simple means of changing the angle of the air outlets relative to the residue flow from the back of the combine. Total cost and time for fabrication and installation of the chaff and straw spreader was $710 for materials and 15 hours of labor. Once air velocity, distributor angles, and air deflectors are set, operation of the chaff and straw spreader does not require active operator control.

Fig. 1. Fan with attached dual outlet manifold and flexible ducting hose mounted behind the engine of a Hege 140 plot combine.

Fig. 2. Air distribution pipes with holes and deflectors mounted just below the upper and lower sieves.

Part 4. Economics and Sustainability

A Pilot Study of Yield and Protein Response to N for Dryland Spring Wheat Classes in Eastern Washington Using Variety Testing Data

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This was a pilot study funded by the Washington Wheat Commission to determine what useful information on spring wheat yield and protein response to N might be gleaned from data collected by Washington State University’s Uniform Cereal Variety Testing Program in eastern Washington. The study revealed that the variety